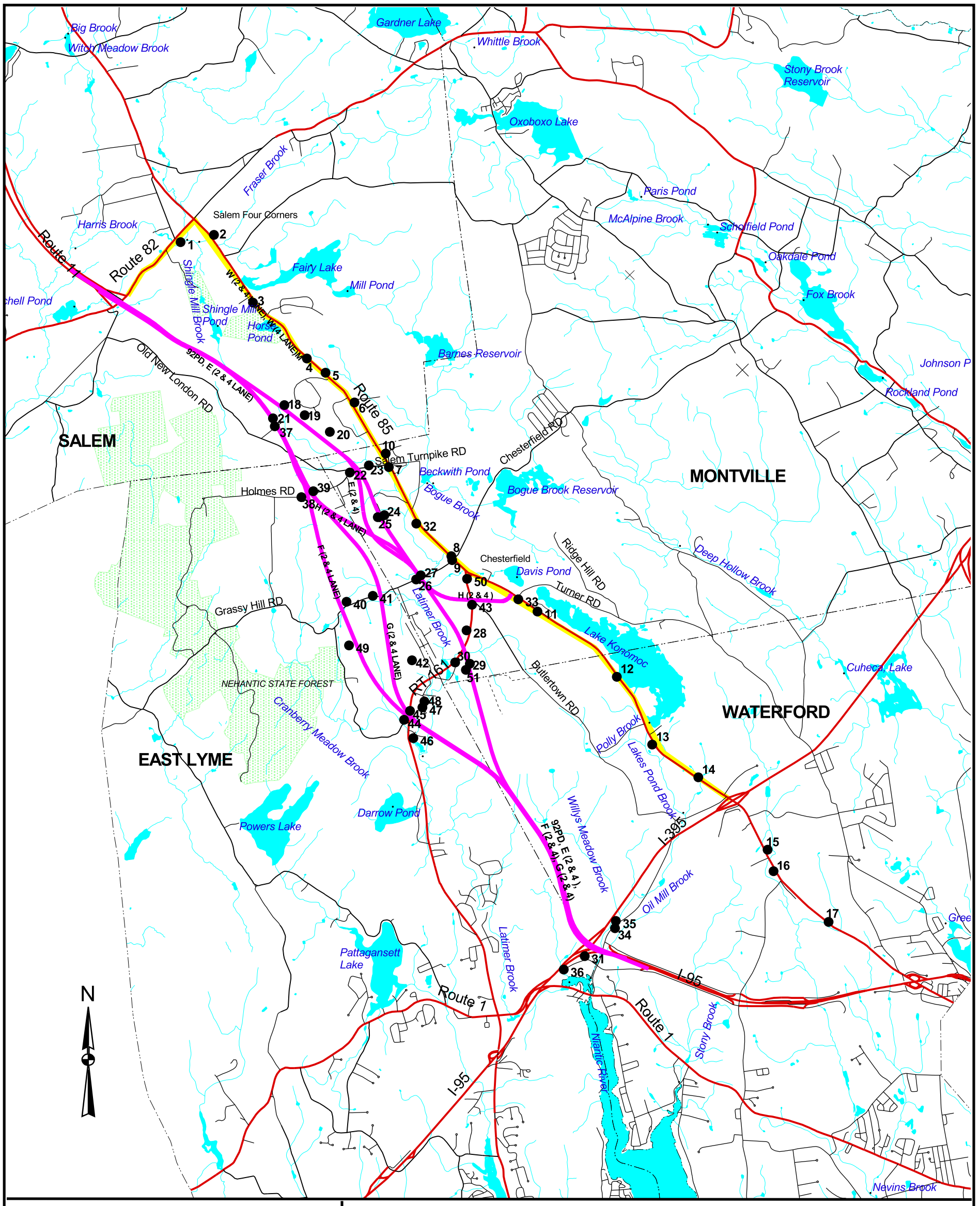
ES.4.2 NOISE

A noise monitoring program was undertaken within the corridor to measure existing noise levels at various representative locations. A total of 51 receptor sites along the various alignments were selected for monitoring (Figure ES-10). Noise measurements were recorded at each of the 51 receptor locations during June and July, 1998 in accordance FHWA guidelines published in *Fundamentals and Abatement of Highway Traffic Noise* and *Measurement of Highway Related Noise*. The receptor locations were selected to be representative of potentially critical noise-sensitive sites. According to the FHWA guidelines, noise sensitivity (i.e., noise level, measured in decibels (dBA)) varies depending on land use. FHWA's Noise Abatement Criteria (NAC) indicates that the noise threshold for "Category B" land uses, such as schools, hospitals, churches, and private residences, is 67 dBA. The NAC for Category B land uses applies to all of the receptor sites selected for this study.

The tabulation of noise level readings revealed that current noise levels approach or exceed the NAC of 67 dBA at 14 of the 51 receptor sites, as noted in Table ES-11.



LEGEND

- Noise Receptors
- Expressway Alternatives
- RT 82/85 Widening/Upgrade Alternatives
- State Forest
- Streams
- Waterbodies

State of Connecticut Department of Transportation
Federal Highway Administration

ROUTE 82/85/11
ENVIRONMENTAL IMPACT STATEMENT (EIS)

IN THE TOWNS OF
EAST LYME, MONTVILLE, SALEM AND WATERFORD

STATE PROJECT #120-81

NOISE RECEPTOR LOCATIONS

Notes:

Sources:
Hydrology: CTDEP Natural Resources Center GIS Database 1994

2500 0 2500 5000 Feet
500 0 500 1000 1500 Meters

August 1998

Figure ES-10

TABLE ES-11
EXISTING NOISE LEVELS APPROACHING OR EXCEEDING NAC

RECEPTOR SITE NUMBER	SITE LOCATION	1998 EXISTING MEASURED L_{EQ}
1	Route 82, no. 66	69
4	Route 85, rest area	70
5	Route 85, no. 412	69
7	Route 85, no. 1605 (at Salem Tnpk.)	66
8	Route 85, no. 1605	70
9	Route 85, no. 1596 (motel and store)	66
11	Route 85, no. 1394	69
12	Route 85, no. 1214	72
14	Route 85, no. 1081	70
16	Route 85, no. 964	66
17	Route 85, near Crystal Mall	72
31	Gurley Rd., no. 13	70
32	Route 85, cemetery	69
33	Route 85, between nos.1422 - 1461	70

ES.4.3 AIR QUALITY

Air quality is defined on a regional scale and characterized based on minimum National Ambient Air Quality Standards (NAAQS), which the Connecticut DEP adheres to in administering the federal Clean Air Act. NAAQS provide standards for six priority atmospheric pollutants; these are carbon monoxide (CO), total suspended particulates (TSP), sulfur dioxide (SO_2), nitrous oxide (NO_2), ozone (O_3) and lead (Pb). Two classes of ambient air quality standards have been established: primary standards defining levels which the EPA has judged necessary to protect public health; and, secondary standards defined to protect soils, vegetation, wildlife, and other aspects of public welfare.

Areas meeting the NAAQS are defined as being in attainment while areas not in compliance with the NAAQS are designated as nonattainment areas. States with nonattainment areas are required to revise their State Implementation Plan (SIP) to provide for attainment of the NAAQS. The corridor study area is located within a portion of the state designated as serious nonattainment for O_3, emphasizing the need

for careful agency review of potential emissions sources, reduction of new emissions wherever possible, and implementation of measures and strategies that might improve existing conditions. The study area is located within a portion of the state designated as attainment for CO.

ES.4.4 BIOLOGICAL DIVERSITY

The study area is located within a near-coastal upland, the northern border of which lies within 48 km. (30 mi.) of Long Island Sound. It is characterized by low rolling hills, moderately broad and level upland and valley bottoms, and local areas of steep and rugged topography. Elevations in the corridor range from 165 m. (540 ft.) in the northern portion of the corridor to sea level in the southern part of the corridor. The greatest relief is found near the north and central portions of the corridor.

The type, size, location and quality of water resources in the corridor are important factors influencing the localized and regional ecology. Latimer Brook is the most important waterway within the corridor; others include Oil Mill Brook, Shingle Mill Brook and Harris Brook. All are designated Class A streams with substantial wildlife and fisheries resources. Shingle Mill Pond and Horse Pond are both owned and maintained by the DEP. Latimer Brook is stocked annually with trout by the DEP.

Vegetation Cover and CommunityTypes: Vegetation within the region varies with a number of factors, including the drainage class of the soils in a particular area, topography, hydrology, aspect, microclimates, and human influences. Depending on these variables, different plant communities may develop in separate areas; often these communities will reflect the ecological system which is found there. The primary plant communities documented within the study corridor include:

- Mixed Oak Community - found throughout the project area on side slopes/terraces;
- Chestnut Oak Community - generally located in the southern portion of the corridor, at the tops of ridges and knolls;
- Red Maple Community - found primarily in wetland areas; it is the dominant forested wetland community in the corridor;
- Maple-Ash Community - found at the base of slopes and in uplands adjacent to wetland areas; and
- Pine-Spruce Community - found, within the corridor, only on watershed lands adjacent to Lake Konomoc.

Tree species observed within the corridor include butternut (*Juglans cineria*), hackberry (*Celtis occidentalis*), and sweetgum (*Liquidamber styraciflua*). These trees are worthy to note since they are uncommon in the corridor.

In addition to forested communities, there are non-forested communities within the corridor which exhibit different types of vegetation and habitat. Grasslands are scattered throughout the corridor; they are generally associated with agricultural operations, but also occur in areas where the land has recently been disturbed by human activity, such as gravel mining operations. Grasslands are common in the central portion of the corridor, however, they are relatively small compared to the forest areas. Shrublands also occur within the corridor. They generally occur in abandoned agricultural field areas in successional stages of reforestation. These areas are dominated by shrub vegetation interspersed with grasses and forbs.

Fisheries Resources: One of the largest and most notable riverine system in the area is Latimer Brook, which flows from Salem Turnpike south to Flanders, before discharging into the Niantic River. Latimer Brook exhibits many favorable characteristics of fisheries habitat such as pools, riffles, and meanders; it also has abundant cover generally composed of vegetation, boulders/rocks, and undercut banks. Many of the other smaller brooks within the corridor also provide fisheries habitat; these include Harris, Shingle Mill, and Fraser Brook, located in the northern portion of the corridor, and discharging to the eastern branch of the Eight Mile River. Also, Lakes Pond Brook and Oil Mill Brook are important fisheries resources in the southeastern portion of the project area.

In addition to riverine systems, there are several lakes and ponds within the corridor which are important fisheries resources. Horse Pond and Lake Konomoc are the two major lacustrine wetlands within the corridor. Horse Pond is a DEP-owned recreation area, heavily used by fishermen. The DEP currently has a stocking program for Latimer Brook within the project area.

Avian Resources: Avifauna within the corridor area is diverse due to the number of habitat types present. Habitat types such as mixed hardwoods of varying age categories, coniferous forest, grasslands, shrublands, open water, and emergent, shrub and forested wetlands can all be found within the corridor. Modified by variations in topography, climate and other factors, these habitats are even more dynamic and diverse.

An inventory of bird species was compiled for the corridor area. The *Atlas of Breeding Birds of Connecticut* was utilized to determine what species have been documented as breeders within the corridor area. According to the atlas, 84 bird species have been confirmed breeders, 22 species are probable breeders and 11 are possible breeders within the corridor, for a total of 117 breeding species. There are a number of species within the corridor which prefer large blocks of unfragmented forest land for successful breeding.

Mammalian Resources: The study corridor exhibits many of the mammal species commonly found in the southeastern part of the state. Mammals within the corridor were inventoried based on field observation and by consultation with federal, state, and local agencies, as well as a comprehensive literature search. It is estimated that 45 species of wildlife may occur within the project area. With only a few exceptions, most of the mammals found in forests tend to be generalists in terms of forest type; fewer generalists are found among the birds and herpetofauna. Many of the species which may occur in the corridor can be found in all types of deciduous and coniferous forests.

Reptilian/Amphibian Resources: Field investigations for reptiles and amphibians (herpetofauna) consisted primarily of direct observation, but also included hand capture, log-rolling, and searching under rocks and debris. Reports from local, state and federal agencies as well as local residents have also been considered in developing a herpetofauna inventory for the corridor area. It is estimated that 17 amphibian and 19 reptilian species may occur within the study corridor. During field investigations, nine amphibian species and eight reptilian species were observed. Amphibian species tended to be more common in or near wetland areas, since many amphibian species utilize wetlands for breeding purposes.

Wildlife Species/Community Diversity: The study corridor exhibits good wildlife species and community diversity. Given the expanse of the study area, there are many types of communities and habitats represented; consequently, high numbers of species were expected. The actual numbers of species reported during field investigations in the study area have been moderate to high. Most of the field investigations took place during only a short period of time, from the late-winter of 1997 to mid-summer of 1998. Field observations have been referenced in addition to a number of existing information sources identified through literature searches and correspondence with local, state, federal, academic and public sources.

Threatened and Endangered Species: A number of endangered, threatened and species of concern have been identified within the corridor by federal, state, and local agencies, as well as by field investigations. Correspondence with the agencies revealed that seven protected species may occur in the corridor. Also, field investigations have revealed three additional species identified as state species of concern.

- Federally-listed Species - FWS has indicated that federally threatened or endangered species which may occur in the project area include the American peregrine falcon (*Falco peregrinus anatum*) and the bald eagle (*Haliaeetus leucocephalus*); both are transient species which may be present during migration. The small whorled pogonia (*Isotria medeoloides*) is listed as a federally threatened species for New London

County, and American chaffseed (*Schwalbia americana*) is a federally endangered species with historic records in the state.

- State-listed Species - DEP has identified three areas which are critical habitat for state protected species. Horse Pond supports a population of Small's yellow-eyed grass (*Xyris smalliana*), a state endangered species. DEP also has an historic report of American chaffseed (*Schwalbia americana*) identified near Route 161. The third area is Latimer Brook; this area supported a population of thread-leaf sundew (*Drosera filiformis*), which is an endangered species in Connecticut, but is currently proposed for reclassification as a species of State Special Concern (historic).

  In addition to the species identified by the DEP above, three other species of concern were observed in the field, the red-shouldered hawk (*Buteo lineatus*), savannah sparrow (*Passerculus sandwichensis*), and brown thrasher (*Toxostoma rufum*).

Habitats: A species habitat includes, but is not limited to, land and water area, physical structure and topography, flora, fauna, climate, human activity, and the quality and chemical content of soil, water, and air. A species that requires very specialized types of habitat can be especially vulnerable to habitat changes and/or modifications.

Mature forest ecosystems dominate in the corridor. Other types of habitat include forested wetlands, scrub-shrub wetlands, emergent wetlands, open water, floodplains, and pine plantations. Many of the wetland areas within the corridor function as wildlife habitat; generally, wetland areas which did not exhibit wildlife habitat functions were either small in size, had low diversity, were previously disturbed, or were located near developed areas. Wetlands that do function as wildlife habitat are generally larger in size and more isolated from man-made disturbances. In many cases, riverine areas are associated with forested wetlands, increasing the wildlife value of those systems. Forested wetlands not only provide specialized wetland functions for wildlife, but also provide an extension of unfragmented upland forest areas adjacent to them. Scrub-shrub and emergent wetlands are more open and are preferred by some species of wildlife over forested wetlands.

Habitat Blocks: In an effort to document areas which are the most important habitats to forest-dependent species, unfragmented forest blocks have been delineated within the corridor. There have been a number of recent studies on the size of forest blocks required for successful breeding of certain "area-sensitive" avian species (avifauna are the most prevalent, with some species requiring large tracks of undisturbed forest for successful breeding). This document considers blocks between 50 and 200 ha. (125 and 500 ac.) in size as having moderate value, and blocks greater than 200 ha. (500 ac.) as having high value for forest interior species. The moderate value blocks support fairly successful breeding avian species and are also important for other vertebrate organisms. Blocks larger than 200 ha. (500 ac.) generally have higher success rates than do the

smaller blocks, however, blocks larger than 300 ha. (740 ac.) may have additional habitat value for raptor species, such as the red-shouldered hawk found within the project area.

TABLE ES-12
UNFRAGMENTED
FOREST HABITAT BLOCKS

BLOCK NUMBER	BLOCK SIZE
1	271 ha. (671 ac.)
2	835 ha. (2,065 ac.)
3	94 ha. (233 ac.)
4	52 ha. (130 ac.)
5	167 ha. (413 ac.)
6	77 ha. (190 ac.)

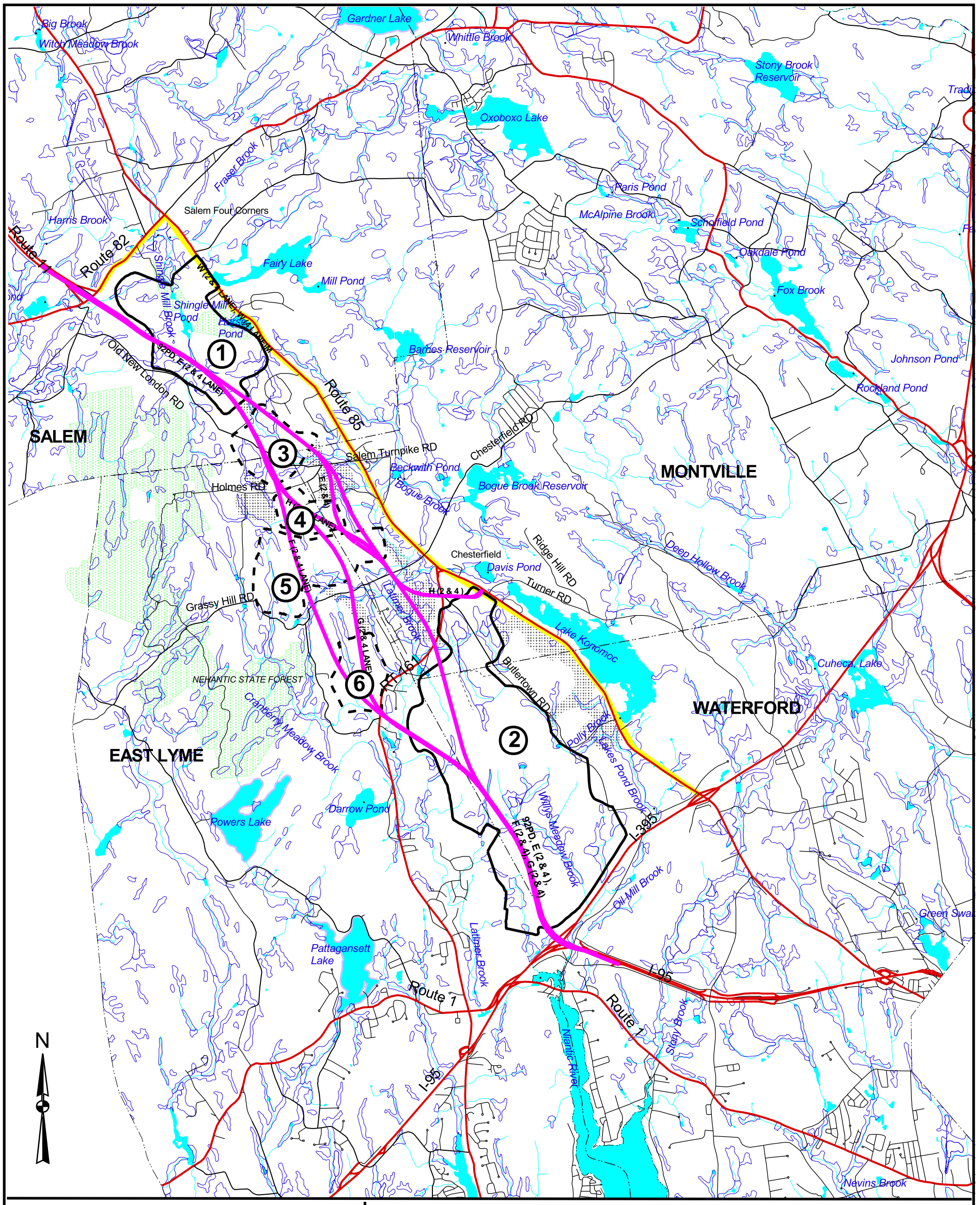
Unfragmented forest habitat blocks were delineated based primarily on aerial photographs and field investigations and areas were calculated. Within the study area, there were two unfragmented forest blocks with areas greater than 200 ha. (500 ac.) and four blocks with areas between 51 and 200 ha. (125 ac. and 500 ac.) as noted in Table ES-12. Grassland blocks were delineated for the corridor using a similar method as for the forest blocks; however, of the areas noted, none were greater than 200 ha (500 ac). Wildlife corridors were also identified. These corridors are primarily forested areas which are 100 m. (330 ft.) wide or greater that connect two or more forest blocks, facilitating movement of wildlife between the blocks. The locations of the six forest blocks and the identified habitat corridors are shown on Figure ES-11.

ES.4.5 TOPOGRAPHY, GEOLOGY AND SURFACE/GROUNDWATER RESOURCES

Topography: The varied topography in the Route 82/85/11 study area corridor generally reflects the alternating hill and valley terrain of the glaciated Northeast region. In the corridor, rough terrain with steep wooded slopes and narrow valleys is found in Salem, Montville and northern East Lyme, along the East Lyme/Waterford town line. Areas with poorly drained and/or shallow to bedrock soils or steep slopes tend to be the less developed areas in the towns. To the south, the landscape moderates with the approach of the coastal plain of Waterford and East Lyme in the vicinity of Niantic Bay and Long Island Sound.

Surficial Geology: The corridor study area is characterized by a surficial covering of glacial till and stratified sand and gravel; soils within the corridor have formed in glacial till, deposits of stratified sand and gravel, and alluvium. These glaciofluvial, sand and gravel units are capable of storing and yielding enough water to be considered aquifers.

Bedrock Geology: The bedrock of this area consists primarily of units of volcanic and sedimentary origin. The resultant bedrock types are gneisses and schists with intrusions of granite and pegmatite. Prominent structural features in the corridor, contributing to its many ridges and valleys are the Honey Hill fault, Montville dome, Hunts Brook syncline and the Lyme dome. Several rock formations occur within the corridor, however, the greatest concern within the corridor, with respect to surface water



LEGEND

- Unfragmented Forested Wildlife Habitat Block > 200 hectares (500 ac)
- Habitat Block 50-200 hectares (125-500 ac)
- Habitat Corridors
- Waterbodies and Streams
- Wetlands
- State Forest
- Expressway Alternatives
- RT 82/85 Widening/Upgrade Alternatives

State of Connecticut Department of Transportation
Federal Highway Administration

ROUTE 82/85/11
ENVIRONMENTAL IMPACT STATEMENT (EIS)

IN THE TOWNS OF
EAST LYME, MONTVILLE, SALEM AND WATERFORD

STATE PROJECT #120-81

WILDLIFE HABITAT

Notes:

Sources:
Habitat Blocks and Corridors: Maguire Group
Hydrology: CTDEP Natural Resources Center GIS Database 1994
Wetlands: CTDEP/NRCS Soil Database and aerial photography
Alternatives: CTDOT and Maguire Group

2500 0 2500 5000 Feet

500 0 500 1000 1500 Meters

August 1998

Figure ES-11

contamination that occurred following construction of the first section of Route 11, is with respect to the Brimfield and Tatnic Hill formation and Plainfield formation.

The Brimfield and Tatnic Hill formations are predominately biotite-schists containing a small percentage of accessory iron sulfides (pyrite or pyrrhotite). The Brimfield schists were used to construct a rock embankment along the shoreline of Witch Meadow Lake in Salem, and it is believed that leachate from the rocks induced a drastic drop in the pH of the lake causing the lake to become uninhabitable for fish. This, however, is thought to have been a temporary condition with no lasting adverse effects.

A similar formation is associated with the Hunts Brook syncline which runs through the study area near Holmes Road and east across Route 85 to Beckwith Pond. It crosses Route 85 again at the I-395 interchange and continues southwest to the Niantic River. Some quartzites of the Plainfield formation are identified as "locally pyritic". Units of this type are found near Grassy Hill and the East Lyme-Montville town line; in the vicinity of Route 161and Butlertown Road east of Silver Falls; east of Route 161 along the East Lyme town line and the east side of Pigeon Hill. These units would be traversed by all of the new expressway alternatives, however, neither the Brimfield/Tatnic Hill formation of the Hunts Brook syncline or the Plainfield formation are believed to contain the problematic units that are present in the northerly formation.

Surface Water and Groundwater Hydrology: The project corridor is located principally within the Southeast Coast major watershed; a small section in the northern portion of the corridor is within the Connecticut River Basin watershed. In the study corridor, surface water flows southerly toward the Niantic River. The principal subregional drainage basins in the corridor area are the Latimer Brook and Oil Mill Brook basins.

Aquifer deposits within the study corridor were identified and evaluated by the DEP in cooperation with the USGS. The most important of these stratified drift deposits are those whose material composition and depth have potential for high water yields. The most productive aquifers are located along the major streams and the adjacent wetland areas. The coarse-grained stratified drift deposits occur primarily along Latimer Brook. In the northern section of the project corridor, a coarse-grained stratified drift deposit is located south of Barnes Reservoir extending southerly along Latimer Brook to Beckwith Pond. This stratified drift deposit continues southwesterly along Latimer Brook, crossing under Route 85 and ending just south of Grassy Hill Road. At the intersection of Walnut Hill Road and Route 161 in East Lyme, an area of coarse grained, stratified drift deposits is located along Latimer Brook extending in a southerly direction and ending at I-395.

A second area of coarse-grained stratified drift deposits is located along the northern and southern boundaries of Lake Konomoc. The area of stratified drift deposits south

of Lake Konomoc extends along the Lake Ponds Brook in a southerly direction ending at I-395. Surficial materials over the remainder of the project corridor consist of till deposits, a mixture of gravel, sand, silt and clay. These deposits have a much lower capability of storing water and thus generally have low water yield rates.

Water Quality: The greatest water quality concern in the project corridor is with regard to the pollutants that are found in highway runoff. Constituents generated by operating vehicles and atmospheric deposition include nutrients, heavy metals, oil and grease. The amount of these constituents can be affected by traffic characteristics, highway design, climate and land use. Highway pollutants can accumulate on highway surfaces, median areas and adjoining rights-of-way.

Standards for water quality within the state have been established by DEP. Water Quality Classifications, based on these standards, have been established to guide use of both surface and groundwater resources. There are five general classifications: Class AA , A, B, C and D; Class AA represents the highest quality resource within this range, while Class D indicates a persistent presence of one or more pollutants.

- Surface water - Lake Konomoc and Beckwith Pond are classified as AA; both of these surface water bodies are drinking water sources for the City of New London and Towns of Waterford and Montville. Latimer Brook and Lakes Pond Brook are both classified as A. This designation indicates that the water is suitable for fish and wildlife habitat; recreational uses; agricultural and industrial supply uses; and use as a potential drinking water supply source. All other surface water resources in the project corridor, which do not have a specific designation, are considered to be Class A, according to DEP.

- Groundwater - Groundwater sources within the corridor area have also been classified, by the DEP, for water quality. The groundwater quality classification system uses the same type of designations and standards as used for surface waters (preceded with the letter "G"). Most of the land area northeast of Route 85 is over groundwater with a Class GAA identification. This classification is for existing or potential public water supply areas and areas hydraulically connected to a surface water body which is used as a public drinking water supply source. Groundwater associated with the surface water supply watershed for the City of New London and Towns of Waterford and Montville is designated Class GAA. All other groundwater resources in the project corridor that do not have a specific designation are considered to be Class GA. GA groundwater is in areas of existing or potential private water supply and is assumed to be suitable for drinking water. DEP notes that the area at Salem Four Corners, although designated a Class GA groundwater area, may not be currently meeting that standard.

Drinking Water Supply Systems: The project corridor includes surface and ground water resources used for public drinking water supply; specifically, the area northeast of Route 85 includes surface water reservoirs and ground water wells that provide drinking water to community water systems. PSG New London Utilities (PSGNLU) operates the water system which serves the entire City of New London and has established interconnections with the Ridgewood Park Independent Water System in Waterford and the Town of Montville Municipal Water system. The 1997 average daily demand for the existing water system was 5.4 million gallons per day (mgd) with a future projected demand of about 6.3 mgd.

PSGNLU relies entirely on surface water supplies located within the project corridor including Fairy Lake, Bogue Brook Reservoir, Barnes Reservoir, Beckwith Pond, Davis Pond, Great Swamp, and Lake Konomoc. The three upstream reservoirs, Fairy Lake, Bogue Brook Reservoir and Barnes Reservoir, are interconnected by open channels which flow into Beckwith Pond. Lake Konomoc serves as the principal storage reservoir of the PSGNLU system.

Public Water Supply Watershed Lands : The City of New London Water Department owns, and PSGNLU manages, several parcels that contain not only surface water reservoirs but also the adjoining watershed lands of the New London, Waterford and Montville water supply. The adjacent undeveloped land serves as a buffer to these sensitive resources. Nine parcels owned by the City of New London have frontage on Route 85 and could be affected by any of the proposed road widening scenarios (Alternatives $W_{(4)}$, $W_{(4)}$m, and $W_{(2)}$) as well as by partial build Alternatives $H_{(4)}$ and $H_{(2)}$. Public water supply reservoirs including Fairy Lake in Salem; Bogue Brook Reservoir, Beckwith Pond, and Davis Pond in Montville; the inactive Polly Brook well in Waterford and Lake Konomoc in Montville and Waterford are located in the corridor proximal to Route 85.

ES.4.6 WETLAND RESOURCES

Wetland Identification and Mapping: Preliminary identification of wetland resources was achieved through use of secondary information sources including ConnDOT mapping depicting wetlands delineated under prior studies, soil mapping from the Natural Resources Conservation Service (NRCS) and aerial photographs. Geographic Information System (GIS) soils mapping was prepared based on hydric soils and alluvial soils marked over standard USGS quadrangle maps.

All mapped areas were examined in the field; following field reconnaissance, the GIS maps were modified using aerial photographs and field observations to identify wetland areas which are either more extensive or less extensive than identified by the soils map.

During field reconnaissance, consideration was given to those areas which may qualify as wetlands based on *either* the ACOE three-parameter approach to defining wetlands or the state soils-based wetland definition, in accordance with DEP jurisdictional criteria.

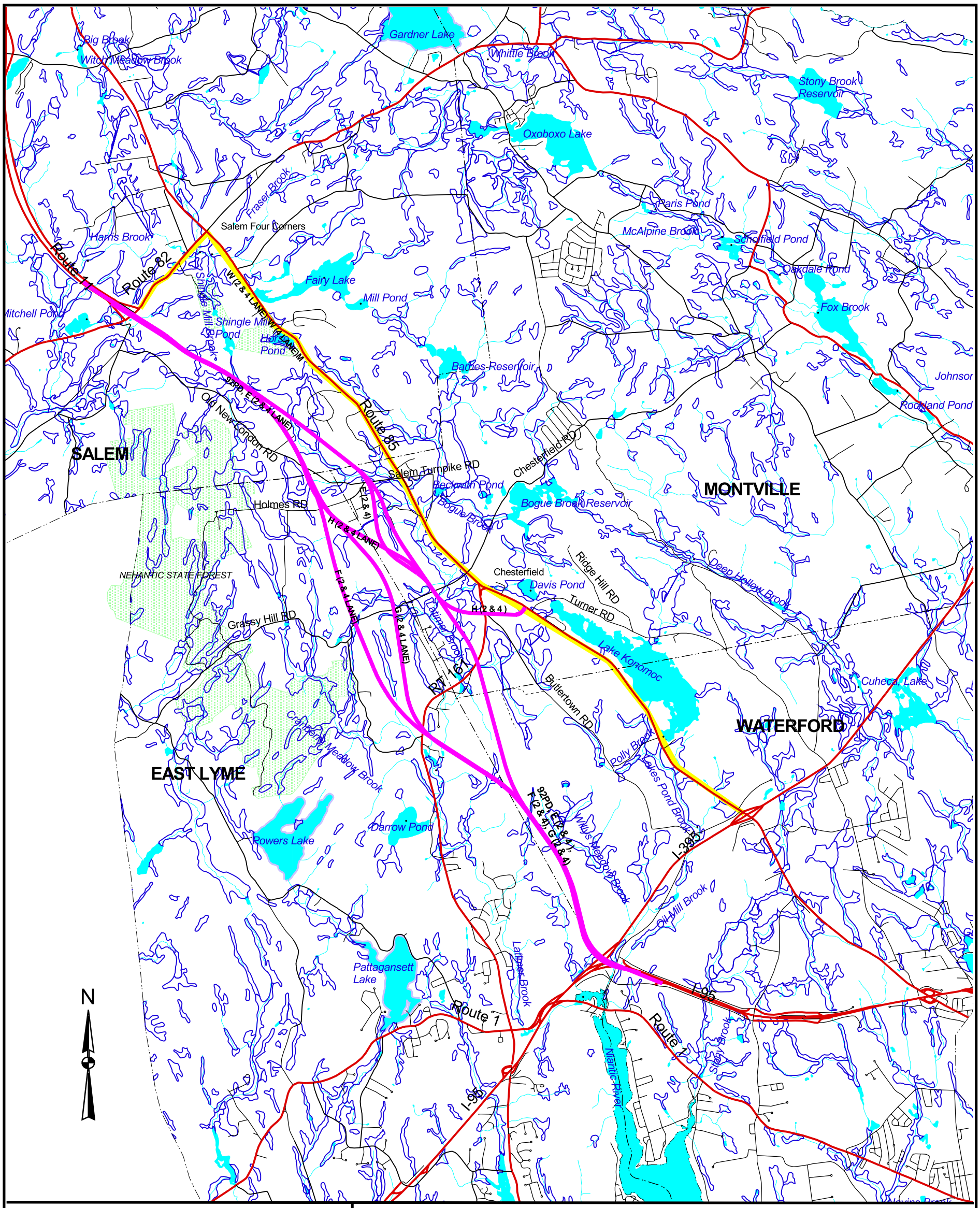
The function and value of wetlands in the study corridor have been documented using the *ACOE Highway Methodology Workbook Supplement* (ACOE, 1995). The outcome of this process is the development of the Least Environmentally Damaging Practicable Alternative, or LEDPA. The LEDPA is the alternative which substantially meets the project purpose and need while resulting in the least adverse impact upon resources.

*Field Verification of Wetland System Function*s: Principal functions and values of each wetland were determined based on the *ACOE Highway Methodology*, which considers thirteen principal functions and values. This methodology is used to assess the functions and values provided by each wetland area, and to identify appropriate avoidance and minimization techniques that can be applied to the various alternatives to reduce impacts to wetlands. If a particular consideration or qualifier applies to the wetland, it is evidence that a particular function or value occurs in that wetland; the more qualifiers that apply, the more likely the function or value occurs.

Field assessment of project area wetlands and determinations of wetland functions and values were primarily qualitative in nature (as is typical for an DEIS). A more detailed and precise quantitative evaluation will be undertaken for the "preferred alternative", with results reported in the FEIS. The only quantitative data described for this evaluation were preliminary wetland area calculations and distances to nearby development.

Description of Corridor Area Wetland Resources: The wetland systems evaluated and documented, herein, are specific localized wetland areas along the proposed alternative alignments. Wetlands throughout the entire corridor area, and adjoining areas, are shown on the generalized mapping (Figure ES-12); the wetlands depicted were compiled from both primary and secondary sources. Three generalized wetland classification categories, laucustrine, riverine and palustrine, are represented within the corridor study area. Wetlands composed of two or more categories or sub-categories are termed "complexes". In general, wetlands in the corridor are part of one of the three large wetland complexes, the Harris Brook, Latimer Brook and Oil Mill Brook complexes, described below:

- Harris Brook complex - located in the northern portion of the corridor (also includes the Shingle Mill Brook and Fraser Brook systems). This system is predominantly forested wetlands associated with the river systems. There are, however, some areas of scrub-shrub wetland. The Harris Brook complex exhibits 12 of the 13 functions and values, excluding only endangered species habitat, as noted in the ACOE methodology. The more prominent functions and values include floodwater alteration, wildlife habitat, fisheries habitat, sediment/toxicant removal, and groundwater discharge.



LEGEND

- Wetlands
- Expressway Alternatives
- Widening/Upgrade RT 82/85 Alternatives
- Waterbodies and Streams
- State Forest
- DEP Owned Waterbody

State of Connecticut Department of Transportation
Federal Highway Administration

ROUTE 82/85/11
ENVIRONMENTAL IMPACT STATEMENT (EIS)

IN THE TOWNS OF
EAST LYME, MONTVILLE, SALEM AND WATERFORD

STATE PROJECT #120-81

WETLANDS

Notes:

Sources:
Hydrology: CTDEP Natural Resources Center GIS Database 1994
Wetlands: CTDEP/NRCS GIS Database and aerial photos
Alternatives: CTDOT and Maguire Group, Inc.

2500 0 2500 5000 Feet
500 0 500 1000 1500 Meters

August 1998

Figure ES-12

- Latimer Brook complex - a very diverse system constituting the largest overall wetland acreage within the study corridor. This complex exhibits all of the 13 functions and values listed under the ACOE methodology, including endangered species habitat. It includes a well developed riverine system, lacustrine systems, and extensive palustrine systems. Associated with Latimer Brook are expansive floodplain areas, as well as numerous upper tributaries throughout the central and southern sections of the study corridor.

- Oil Mill Brook complex - located in the southeast portion of the study corridor. This complex is composed predominantly of forested wetlands, however, there are some small areas of scrub-shrub and emergent wetlands. The single largest wetland feature in this complex is Lake Konomoc. This complex exhibits 12 of the 13 ACOE functions; only endangered species habitat has not been identified. The predominant functions are fish/shellfish habitat, floodflow alteration, sediment/toxicant retention, and production export. Oil Mill Brook flows into the corridor from the southeast corner of the corridor, near Butlertown and Way Hill Road. Also contributing to Oil Mill Brook is Lakes Pond Brook which flows from Lake Konomoc and receives flow from Polly Brook.

The majority of the wetland areas within the study corridor are deciduous forested wetlands, characterized by deciduous vegetation 6.2 m. (20 ft.) or taller. The forested wetlands within the corridor tend to be comprised of medium-aged to mature trees, with well-developed shrub and herbaceous layers. Forested wetlands occur along riverine systems and within upland groundwater seeps, depressions, and drainageways. Although most forested wetlands within the corridor are dominated by red maple, there is still some variation in vegetative species between these individual areas. This is likely caused by to differences in hydrology, soil type, nutrients, and human influences.

Forested wetlands have a number of functions and values associated with them that other wetland types do not have. Since many of the forested wetland areas within the corridor occur along rivers and streams and in floodplain areas, many of the functions associated with riverine systems, such as fish/shellfish habitat, floodflow alteration, and production export, were documented. Some of the forested wetland areas occur in upland depressions, were water is not channelized, and moves very slowly or remains stagnant. In these areas, other functions such as nutrient removal and sediment/toxicant retention were more prevalent.

Some forested wetlands in the corridor had potential value for recreation, however, since many of these areas are located on privately-owned or non-access lands, they are not readily usable. Recreation opportunities in the corridor are primarily limited to public lands.

Scrub-shrub wetlands were the next most commonly found wetland type within the corridor. These wetlands tend to occur in areas of deeper water, such as in depressions and along the edges of lakes, ponds, and meandering rivers. These wetlands are dominated by woody vegetation less than 6.2 m (20 ft) in height. The common functions associated with scrub-shrub wetlands within the corridor were found to be wildlife habitat; nutrient removal and transformation; sediment/toxicant retention; floodflow alteration; and production export. Since most of the scrub-shrub wetlands within the corridor occur in flat areas and in depressions with diffuse water flow, functions similar to those associated with ponded areas were commonly documented. With respect to wildlife habitat, scrub-shrub wetlands are unique from other wetland types in that they support species found in both emergent and forested wetlands, since they are a transition wetland between the two. Scrub-shrub wetlands also provide habitat for a number of species which prefer shrub vegetation over forest or emergent types.

The common functions associated with scrub-shrub wetlands within the corridor were found to be wildlife habitat; nutrient removal and transformation; sediment/ toxicant retention; floodflow alteration; and production export... scrub-shrub wetlands are unique from other wetland types in that they support species found in both emergent and forested wetlands, since they are a transition wetland between the two.

The scrub-shrub wetlands in the corridor exhibit a number of wetland values in addition to the functions discussed above. Recreation is an important value for some scrub-shrub wetlands in the corridor, however, like the forested wetlands, many of these areas are located on privately-owned or other non-access lands. Scrub-shrub wetlands generally have more educational/scientific value in the corridor since they are more dynamic than forested wetlands, and generally have greater species diversity and abundance, although access is sometimes difficult due to high water levels. They also tend to have higher uniqueness/heritage value than forested wetlands because they are not as abundant as forested wetlands in the corridor.

Less common in the corridor, emergent wetlands occur in only a few areas where naturally ponded water is present year-round. Many times, wet meadows are produced by human influence (e.g., mowing, grazing of livestock, etc.) in emergent wetland areas. The most common functions associated with emergent wetlands within the corridor were found to be wildlife habitat, nutrient removal/transformation, sediment/toxicant retention, floodflow alteration, and production export. Because emergent wetlands occur in flat areas and depressions with diffuse water flow, water velocities are very slow, and long water retention times are common. Functions such as nutrient removal/transformation and sediment/toxicant retention are partially dependent on long water retention times.

Some emergent wetland areas occur along the edges of meandering watercourses, where water flow is channelized, but moves very slowly. In these areas, other functions such as fish habitat, sediment/shoreline stabilization, and floodflow alteration become more prevalent. Also, the shores of lakes and ponds are commonly bordered by emergent wetland areas which provide shoreline stabilization from wave action, as well as spawning habitat and cover for many fish, amphibian, reptile and invertebrate pond species of wildlife. Emergent wetlands also provide habitat for a number of species that prefer herbaceous vegetation over forest or shrub types. One emergent wetland within the corridor was reported to have endangered species habitat.

Notable Wetland Areas: During the documentation of wetland areas located within the study corridor, eight wetland areas were observed to have a particular unique or representative character or quality; these wetlands are considered to be notable wetlands. The term notable wetlands has been used to describe those areas that are especially interesting and/or less common resources; the term does not denote or imply any regultory status other than that applied to all wetlands under state and federal regulations. The eight wetland systems of note are:

The term "notable wetlands" has been used to describe those areas that are especially interesting and/or less common resources; the term does not denote or imply any regultory status other than that applied to all wetlands under state and federal regulations.

- Harris Brook System
- Shingle Mill Brook System
- Horse Pond
- Latimer Brook
- Wet meadow south of Grassy Hill Road
- "Wetland PD-12A", a narrow "habitat island" wetland located at the base of a steep ridge in the southern part of the corridor
- Lake Konomoc
- "Wetland PD-30", an expansive ponded area in the southern portion of the corridor, includes scrub-shrub and emergent areas

Tidal Wetlands: Although most of the wetlands throughout the project area are inland (freshwater) wetlands, there is a small area of tidal wetland that could be impacted, either directly or indirectly, if any of the full build expressway alternatives are implemented. Construction of the Route 11 interchange at I-95/I-395, proposed as part of the 92PD, $E_{(4)}$, $E_{(2)}$, $F_{(4)}$, $F_{(2)}$, $G_{(4)}$ and $G_{(2)}$ alignments, would occur in the vicinity of the coastal boundary, as designated under the state's Coastal Area Management (CAM) Act. Oil Mill Brook and Willys Meadow Brook converge at the proposed interchange area and then flow into the Niantic River, which is a tidally influenced navigable waterbody. The northern extent of the coastal boundary and regulated tidal wetlands is approximately 300 m. (1,000 ft.) from the proposed interchange.